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Historiæ Naturalis des animaux sans vertebres, par J. B. P. A. de Lamarck. 3^me. edition. Tome 3^me., 2d partie. Purchased for the Library.

Stated Meeting, Oct. 14, 1845.

Vice President Morton in the Chair.

DONATIONS TO MUSEUM.

Numerous specimens of the following species of fossil fresh water shells, from the shore of White Pond, Warren Co., New Jersey. Presented by Joseph Leidy, M. D.

Limneus elodes; L. Galbanus; Planorbis bicarinatus; P. campanulatus; P. parvus; Paludina decisa; Physa ancillaria; Valvata bicarinata? Cyclas ———.

Group of fossil sponges, &c., from the Crag, Suffolk, England: being the original specimen from which the figure in vol. — of Loudon's Magazine of Natural History was made. Presented by Richard C. Taylor, Esq.

Leafy branch of Pinus Lambertianus Douglass, from the mountains of St. Lucea, Upper California. From Mr. Wm. Gambel.

Dr. Leidy read the following notes on White Pond, Warren Co., New Jersey:

Notes taken on a visit to White Pond, in Warren Co., New Jersey.

By Joseph Leidy, M. D.

In the course of a pedestrian tour, during the latter part of the last summer, accompanied by R. H. Kern, Esq., an artist of this city, while in the northern part of New Jersey, I visited White Pond, in Warren Co. This pond or lake is situated one mile north of the village of Marksboro, is about one mile in circumference, and received its name from its remarkable appearance, arising from its bed being a deposit of a kind of white shell marl. At a short distance it has quite a wintry aspect, the shore appearing as if covered with snow. On near approach, the ordinary observer will be much astonished, and the naturalist much interested in finding a vast quantity of comparatively recent fossil fresh water shells, which not only cover, but in many places appear to form the shore, extending in breadth and depth for several feet. If a bunch of the Helianthemum corymbosum, which grows here profusely, be pulled up, nothing but shells and their fragments will be found adhering to its roots. These shells are evidently washed from the deposit of marl in the bed of the pond, as the neighboring inhabitants state that the shores receive an accession of them every spring.

With the exception of a small species of Cyclas and some fragments of Unios, the shells are all univalve, and most of them are of the same genera and species as those found in our fresh water, of the present time, a few being extinct. Many of them have adhering to their inside some root-like fibres, which upon examination I find to be a species of Chara.

It was a matter of much surprise to me that I could not find a single living molluscous animal in the pond, and a neighbor informed me "no snails had ever been found, and only a very few muscles with flesh in," in it.

The pond is in a limestone region; its water, from its situation, is necessarily calcareous, but probably at some anterior period of time was much more so, was much more affected by the internal temperature of the earth than at the present time, and then teemed with the animals whose testaceous coverings form the deposit of marl.

It is very evident that the deposit of shell marl belongs to the newer Pliocene of some, or tertiary period of other geologists, from the fact of the existence among the shells of the Limneus Galbanus in considerable numbers, which is an extinct species, the abundance of other species now comparatively rare, and the absence of others now common; as for instance, the Planorbis trivolvis, our most common species of that genus, is here completely replaced by the P. campanulatus.

Subjoined is a list of the various fossil shells which I picked up during several hours search along the shore, with the comparative quantities in which they occur.

Limneus elodes, (Say,) rare.
Limneus Galbanus, (Say,) abundant.
Planorbis bicarinatus, (Say,) abundant.
Planorbis campanulatus, (Say,) abundant.
Planorbis parvus, (Say,) abundant.
Paludina decisa, (Say,) moderately abundant.
Paludina: a minute species not determined; extremely abundant.
Valvata bicarinata? (Lea,) extremely abundant.
Physa ancillaria, (Say,) abundant.
Cyclas: a minute species not determined; abundant.
Fragments of Unios, which were too small to distinguish the species.

Mr. James D. Dana submitted the following

General views on the Classification of Animals.

In Cuvier's classification of animals, the division Radiata includes all invertebrated animals not comprised in either of the sub-kingdoms, Articulata and Mollusca. Consisting thus only of refuse species, and not limited by positive characters, as Owen states, we should not expect that the group could be a *natural* assemblage. No line of subdivision, however, has yet been made out, which has met with general favour; yet greater precision has been given to our views of the affinities that run through the animal kingdom, by appealing to the nerves, the seat of sensibility and sentiment, as a basis in classification; and in this manner the subdivisions have been characterised as follows, by Dr. Grant.

I. The *Vertebrata*, having a brain and a spinal cord, constitute the SPINI-VERTEBRATA. II. The *Mollusca*, having the nerves forming generally a transverse series of ganglia disposed around the œsophagus, the CYCLO-GANGLIATA. III. The *Articulata* having no proper brain, and the main cord which runs the length of the body, double, the DIPLO-NEURA. IV. The *Radiata*, having a radiate structure in the body, and the nervous ganglia arranged in a circle, CYCLO-NEURA.

An objection might be made to this system, on the ground of the apparent absence of nerves in some of the lower orders. But a real absence can hardly be concluded, from our inability to distinguish them. Many of these animals show by their voluntary motions and sensibility that nervous influences traverse the body: moreover, nervous matter is secreted in lines. We can therefore only infer the indistinctness, and not the absence of nerves from our ineffectual efforts to trace them out; and we must consequently be guided by general structure, in determining the relations of groups, when the nerves fail of giving aid.

The above arrangement fails, in some respects, of presenting a clear idea of the system in nature, although highly philosophical in its general features. A study of the animal kingdom, as has been lately shown, brings to light lines or general systems of development branching up from the lowest Infusoria to the higher grades of life. It is not true that the forms among the *lower* grades are actually copied in any of the imperfectly developed young of the *superior;* yet there is some general analogy, sufficient to indicate that the former commence on the same system of development with some of the latter, although carried essentially out of the direct upward line by the peculiar vital forces of the species. The Rotifera are decidedly crustacean in type. Their stout mandibles are precisely those of the Cyclopidæ in position, and also in general form; and in their mode of reproduction, the animals are closely similar; yet no young crustacean is ever a Rotifer. The latter belongs to the same system of development with the former, but is a distinct branch, from the regular line, characterized by the peculiar natatory organs, which appear to be the analogues of the branchial or basal appendages to the feet in crustacea. The same reasoning applies to the Bryozoa or Flustroid polyps, which are as nearly allied to the Tunicata as the Rotifers to Crustacea.* It is a side-development from the imaginary line, which connects the Infusoria with the Tunicated Molluscs. The Entozoa afford other examples, one branch of them passing into the Crustacea through the Lernæidæ and Caligidæ, and the other into the Annelida.

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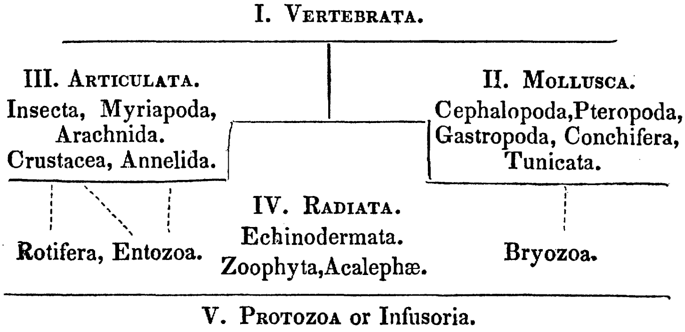
*The Bryozoa have been placed near the Rotifera; but the absence of mandibles, as well as their peculiar type of structure, separates them widely from these crustaceoid species, and allies them as closely to the Tunicata, with which they were first associated by Thomson, under the name of Polyzoa. Lister has a finely illustrated article on this subject in the Philosophical Transactions, for 1834, p. 365

These remarks are intended to support no monad or Lamarckian theory, but only to elucidate the established principle that there are in nature certain distinct systems or types of development. Each species is developed with some reference to one or the other of these systems, but, through the agency of the vital forces peculiar to itself—forces which there is reason to believe only creative power can change.

In accordance with these principles, the several orders of animals may be arranged as follows:



A radiated structure characterizes the simplest form of animal life. Passing up from the monad globule, the structure has its highest development in the Echinoderms. Among Zoophytes, the Hydra forms the first step upward, in which the digestive cavity is a mere sac, which will work equally well inside out, and the mode of reproduction is extremely simple. From this group we pass to the Actinia, in which there is a distinct stomach and a series of fleshy lamellæ around the internal cavity—the first rudiments of an insolation of the functions of digestion and generation—but the circulating fluid is only the elaborated chyle mingled with more or less water from without. A step farther and we find separate organs for the functions of the liver, and a circulating system, in some Echinoderms. Through the Bryozoa, the Infusoria are connected with the Tunicata and the other Molluscs; and through the Rotifera and Entozoa, they connect with the Articulata, thus passing by each way, out of the true Radiate type, into that which characterizes the higher sub-kingdoms. The Bryozoa, Rotifera and Entozoa, may be arranged in the sub-kingdom Radiata, or with the Mollusca and Articulata, whose types of structure they exhibit, though under a Radiate form.

The Echinoderms, although so strikingly peculiar in some species—the Echini—yet through the Holothuria, bear closely upon the Articulata; while the Acalephs incline toward the Mollusca.

In the above remarks, it is not attempted to trace out all the gradations in the groups referred to, but only the most prominent. The animal kingdom is throughout a net work of affiliations, yet there are main trunks and larger branches, to which the smaller anastomosing ramifications are subordinate. Much study will be required before the system of nature from the Protozoa up, can be correctly mapped out.

Mr. Dana read a notice of a new genus of Cyclopidæ, named by him Corycæus. Referred to the following Committee: Dr. Leidy, Mr. Haldeman and Dr. Pickering.

The Chairman read some extracts from a letter recently addressed to him by Prof. Bailey, of West Point, in reference to the skeleton of the Mastodon lately discovered near Newburg, New York. A more detailed account was promised in a future letter.

Stated Meeting, Oct. 21, 1845.

VICE PRESIDENT MORTON in the Chair.

DONATIONS TO MUSEUM.

Specimen of native copper, from Point Keewenon, Lake Superior. From Dr. Pitcher, of Detroit, through Dr. Morton.